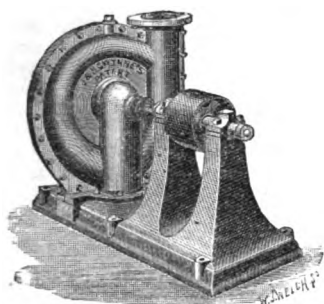


## PATENT IMPROVED CENTRIFUGAL PUMP.

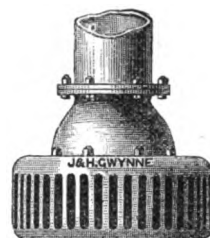
This class of Pump is suitable for raising from 15 to 7000 gallons per minute, to a height of 80 feet.



**CENTRIFUGAL PUMP,  
WITH DOUBLE STANDARDS.**

No. of Pump.	Diameter of Suction and Discharge Pipe.	Quantity of Water discharged per Minute in Gallons.	Horse-power* to work the Pump one foot high.	Size of Driving Pulley.
	in.		H.-p.	diam. width.
1	1	12 to 25	·005	3 by 3½
2	2	44 „ 80	·018	4 „ 3½
3	3	75 „ 120	·030	4 „ 4
4	4	200 „ 300	·078	5 „ 4½
5	5	300 „ 500	·12	6 „ 6
6	6	500 „ 700	·20	8 „ 8
7	7	650 „ 1000	·26	10 „ 9
8	8	800 „ 1200	·32	12 „ 9
9	9	1000 „ 1600	·41	12 „ 9
10	10	1500 „ 2000	·60	14 „ 9
12	12	1800 „ 2800	·80	16 „ 10
15	15	3000 „ 5000	1 · 0	18 „ 12
16	16	3500 „ 6500	1 · 5	20 „ 12
18	18	4500 „ 7000	1 · 8	24 „ 13

\* The power here given is for discharging the minimum quantity.



**FOOT VALVE  
AND  
GRATING.**

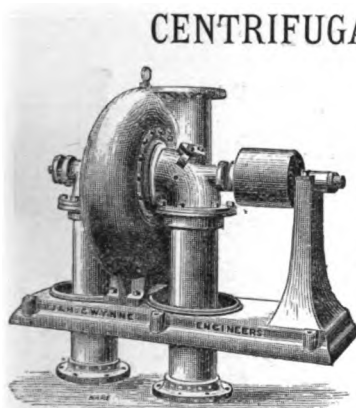
### PATENT IMPROVED CENTRIFUGAL PUMPS (NEW PATTERN),

Specially adapted for Drainage or Irrigation. To throw from 2000 to 8000 gallons per minute, a height of 30 feet.

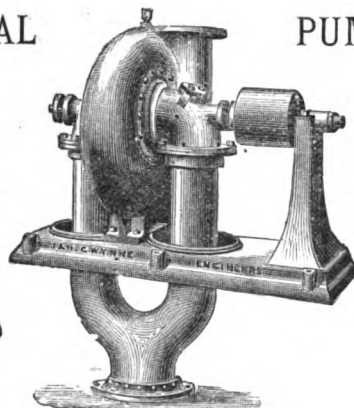
No. of Pump.	Diameter of Discharge Pipe.	Diameter and Width of Pulley.	Quantity of Water in Gallons raised per Minute.	Size packed for Shipment.	Weight.
10	10 in.	9 in. by 9 in.	2000	80 cubic feet.	16 cwt.
12	12 „	10 „ „ 10 „	3000	100 „	20 „
15	15 „	12 „ „ 12 „	4000	130 „	26 „
16	16 „	12 „ „ 12 „	5000	220 „	30 „
18	18 „	14 „ „ 12 „	6000	270 „	40 „
20	20 „	20 „ „ 13 „	8000	400 „	60 „

### CENTRIFUGAL

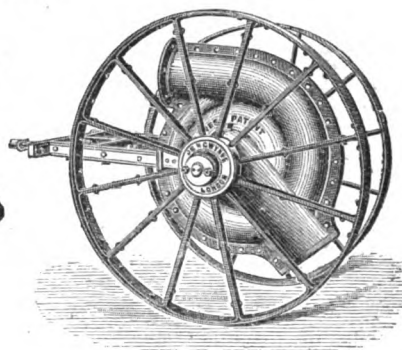
### PUMPS.



New Pattern.



New Pattern, with Breeches Pipe.



On Swivelling Carriage.

### PORTABLE CENTRIFUGAL PUMP, ON SWIVELLING CARRIAGE.

For temporary Drainage or Irrigation, to be drawn by either bullocks or horses.

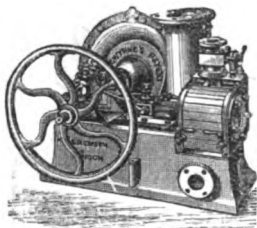
Number of Pump .. .. .	4	5	6	7	8	9	10	12	15
Diameter of Pipes .. .. .	4"	5"	6"	7"	8"	9"	10"	12"	15"
Quantity of Water raised } per minute, in gallons ..	250	400	600	800	1000	1500	2000	3000	4000
Diameter and Width of Pulley	5" x 4½"	6" x 6"	8" x 8"	10" x 9"	12" x 9"	12" x 9"	14" x 9"	16" x 9"	18" x 12"
Size Packed for Shipment ..	26 c. ft.	38 c. ft.	42 c. ft.	150 c. ft.	160 c. ft.	160 c. ft.	170 c. ft.	345 c. ft.	400 c. ft.
Weight .. .. .	6 cwt.	8 cwt.	10 cwt.	14 cwt.	17 cwt.	18 cwt.	20 cwt.	35 cwt.	40 cwt.

Catalogues and Prices on application.

**JOHN AND HENRY GWYNNE,**  
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WORKS, LONDON, W.

# PATENT DIRECT-ACTING CENTRIFUGAL PUMPING ENGINES,

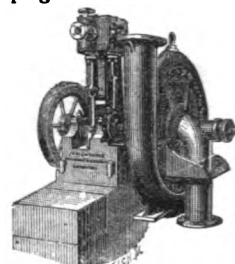
For circulating the water in Surface Condensers of Marine Engines and general pumping.



Horizontal Engine.

Size.	Diam. of Suction and Discharge Pipe.	Horse-power.
No. 3.	3-inch, to discharge	25 (20 feet head)
" 4	" "	40
" 5	" "	50
" 6	" "	60 and 70
" 7	" "	80 to 90
" 8	" "	100 " 130
" 9	" "	150 " 200
" 10	" "	250
" 12	" "	300
" 15	" "	400
" 18	" "	500
" 24	" "	700

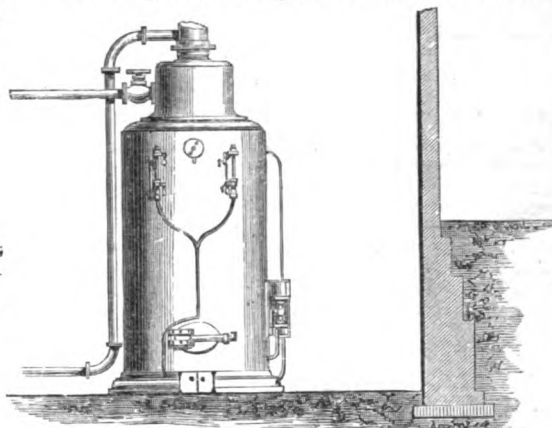
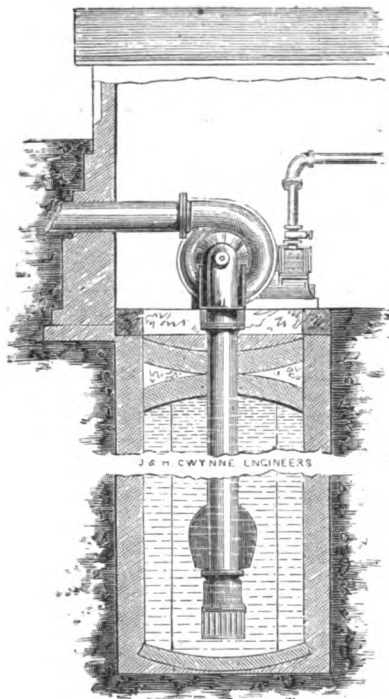
If these Engines are fitted with *variable* Expansion Gear, 15 per cent. extra.



Vertical Engine.

## PATENT DIRECT-ACTING CENTRIFUGAL PUMPING ENGINES.

For Irrigation, Drainage, Reclamation, Manufacturing, or other purposes.



Size of Pumping Engine.	Size of Suction and Discharge Pipe.	Quantity of Water discharged per Minute.
No.		Gallons.
3	3"	120
4	4"	300
5	5"	450
6	6"	650
7	7"	900
8	8"	1000
9	9"	1350
10	10"	1800
12	12"	2700
15	15"	4000
18	18"	6500
24	24"	11,000

If these Engines are fitted with Variable Expansion Valves, 15 per cent. extra.

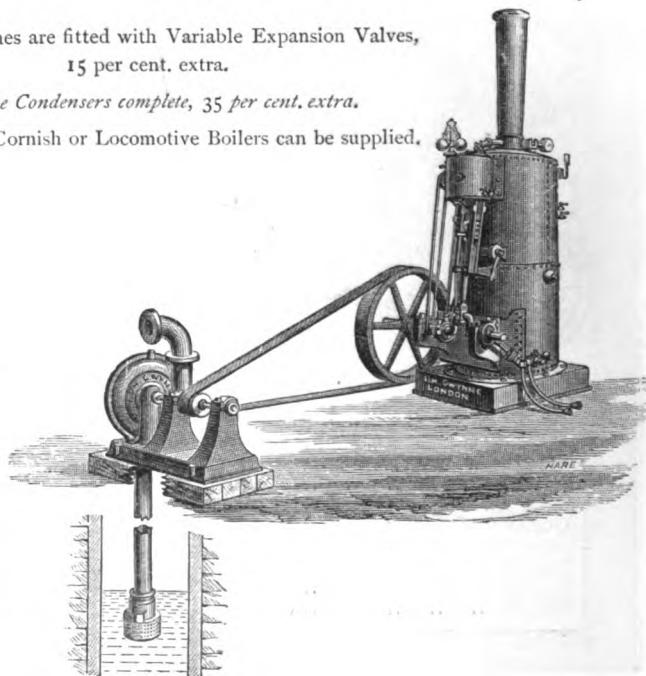
Surface Condensers complete, 35 per cent. extra.

If preferred, Cornish or Locomotive Boilers can be supplied.

## VERTICAL STEAM-ENGINE AND PATENT CENTRIFUGAL PUMP.

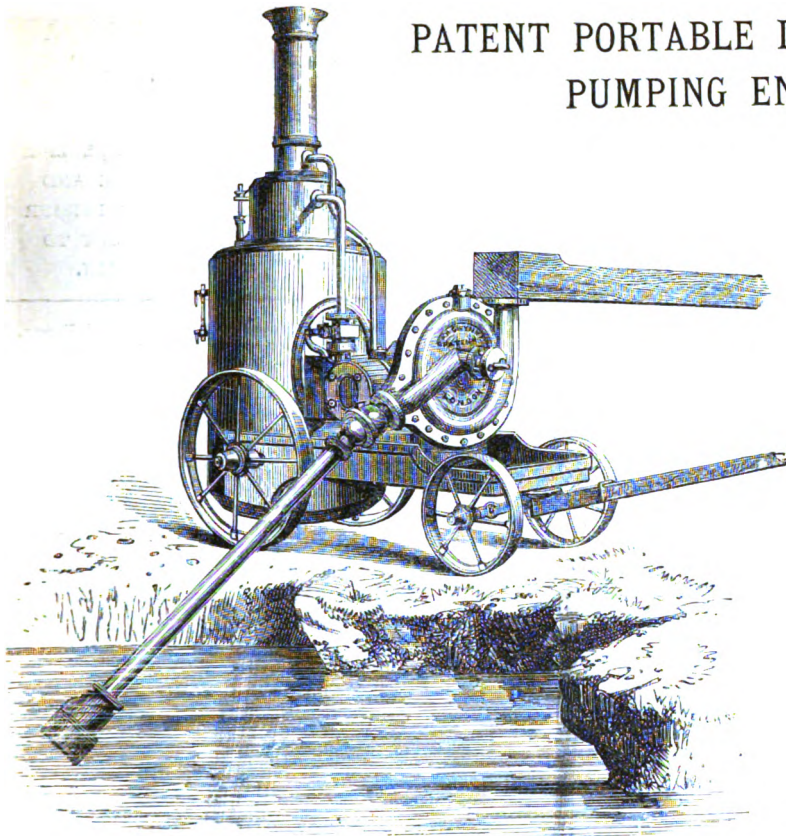
Patent Centrifugal Pump, fixed over a well, for irrigation or any other purpose. When the water is more than 28 feet from the surface, the Pump can be fixed 25 or 30 feet down the well, and the Engine fly-wheel arranged to work over it; or a counter shaft fixed in the top of the well, and the Engine fixed at some distance from it. These Engines will be found less expensive than either portable or fixed Engines and Boilers, as the above only require sufficient foundation to sustain their weight, being entirely self-contained.

Catalogues and Prices on application.



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WORKS, LONDON, W.

## PATENT PORTABLE DIRECT-ACTING PUMPING ENGINE.

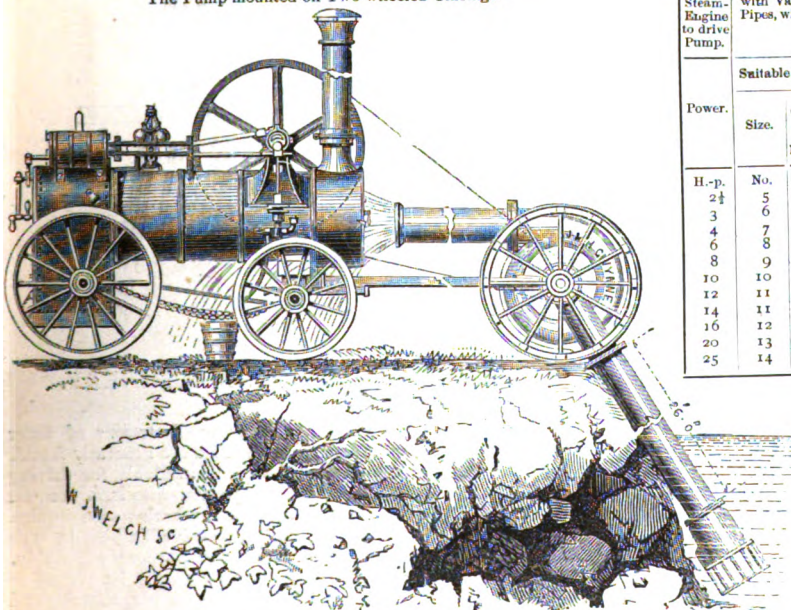


Size of Engine.		Gallons of Water discharged per Minute.
No.		
3		120
4		300
5		450
6		650
7		900
8		1100
9		1300
10		1800
12		2700
15		4000

These Pumping Engines are admirably suited for the Contractor, Colonist, or Squatter, and will be found of immense advantage where Temporary Drainage, Irrigation, or any description of Pumping is required. They are constructed with every care, and are of the *very best* material and workmanship, having in view portability and efficiency. The carriage is arranged to hold these pipes when disconnected, and can be fitted with shafts or a pole for draught. This class of Engine is also made with horizontal tubular boiler.

## PORTABLE STEAM-ENGINE AND PATENT PORTABLE CENTRIFUGAL PUMP.

The Pump mounted on Two-wheeled Carriage.



Portable Steam-Engine to drive Pump.		Patent Portable Centrifugal Pumps, on Bed Plate, with Valve Box and Strainer, Suction and Discharge Pipes, with Bend complete; mounted on Two-wheeled Carriage.					
		Suitable for Lifts of 12 Ft.			Suitable for Lifts of 25 Ft.		
Power.		Size.	Gallons raised per Minute.	Weight of Pump and Pipes.	Size.	Gallons raised per Minute.	Weight of Pump and Pipes.
H.-p.	No.			cwt.	No.		cwt.
2½	5		450	14	4	250	12
3	6		650	18	4	350	12
4	7		1000	23	5	450	17
6	8		1500	28	6	650	20
8	9		2000	32	7	950	27
10	10		2500	40	8	1200	34
12	11		3000	46	9	1500	37
14	11		3500	46	10	1700	44
16	12		4000	58	10	2000	44
20	13		5500	70	11	2500	54
25	14		7000	85	12	3500	60

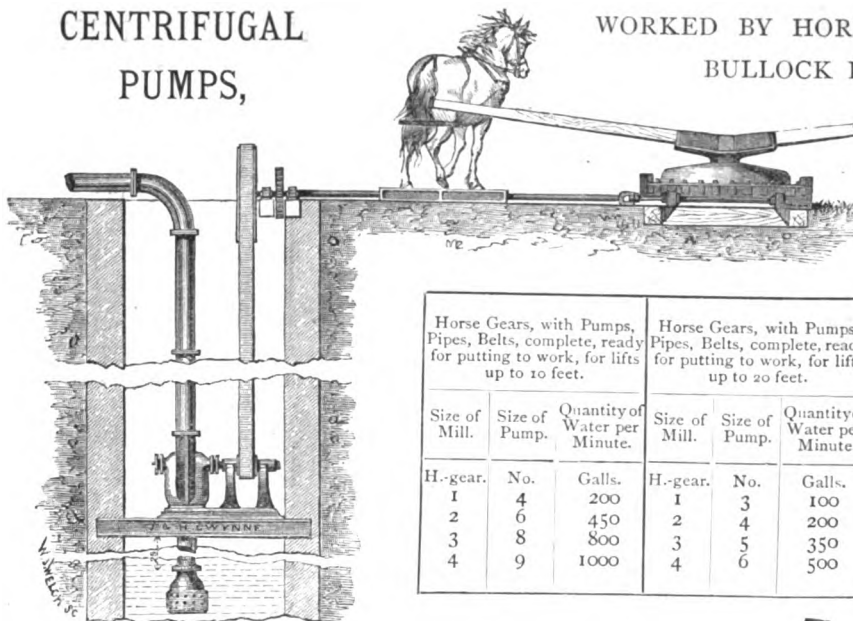
These Engines and Pumps are applicable to all the purposes of the fixed pump, but used for localities where frequent removals are necessary. A great many of these Pumps have been supplied for sheep-washing and irrigation in Australia, New Zealand, Tasmania, and South America, where they have given great satisfaction.

The shafts of the Pump Carriage are arranged to fit in two sockets on the "Fore Carriage" of the Portable Engine. This arrangement keeps both the Engine and Pump in their proper positions, so that the driving belt is kept tight. There are several other plans of mounting the Pump on Carriages, which may be arranged with pole for bullocks, and shafts for horses.

CATALOGUES AND PRICES ON APPLICATION.

**JOHN AND HENRY GWYNNE,**  
ENGINEERS. OFFICES: 89, CANNON STREET, E.C. WORKS: HAMMERSMITH IRON  
WORKS, LONDON, W.



CENTRIFUGAL  
PUMPS,WORKED BY HORSE, MULE, OR  
BULLOCK POWER.FOR COUNTRIES  
WHERE FUEL IS EX-  
PENSIVE AND  
SKILLED LABOUR  
DIFFICULT TO  
OBTAIN.

Horse Gears, with Pumps, Pipes, Belts, complete, ready for putting to work, for lifts up to 10 feet.			Horse Gears, with Pumps, Pipes, Belts, complete, ready for putting to work, for lifts up to 20 feet.			Horse Gears, with Pumps, Pipes, Belts, complete, ready for putting to work, for lifts up to 30 feet.		
Size of Mill.	Size of Pump.	Quantity of Water per Minute.	Size of Mill.	Size of Pump.	Quantity of Water per Minute.	Size of Mill.	Size of Pump.	Quantity of Water per Minute.
H.-gear.	No.	Galls.	H.-gear.	No.	Galls.	H.-gear.	No.	Galls.
1	4	200	1	3	100	1	2	45
2	6	450	2	4	200	2	3	90
3	8	800	3	5	350	3	4	140
4	9	1000	4	6	500	4	5	250

## CENTRIFUGAL PUMP WORKED BY WINDMILL.

This arrangement for working Centrifugal Pumps is particularly suited for the Colonies or other countries where a current of air may be relied on, for raising water from wells, rivers, or ponds, for irrigation, &c.

## WINDMILL.

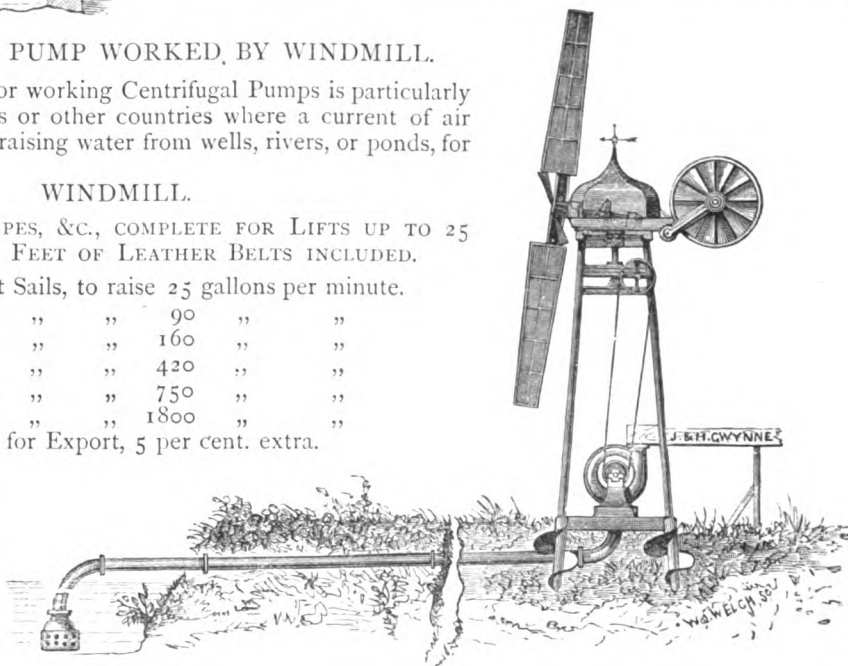
WITH PUMP AND PIPES, &C., COMPLETE FOR LIFTS UP TO 25 FEET,\* WITH 35 FEET OF LEATHER BELTS INCLUDED.

Mill, with 15-foot Sails, to raise 25 gallons per minute.

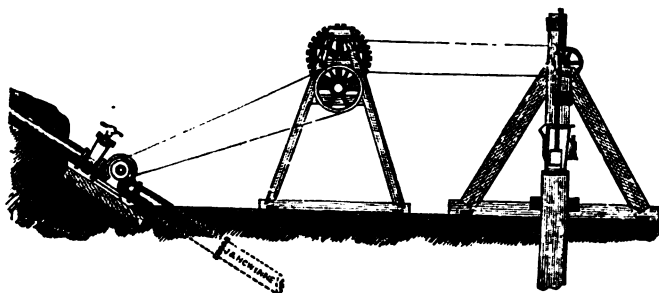
"	"	24	"	"	90	"	"
"	"	34	"	"	160	"	"
"	"	45	"	"	420	"	"
"	"	55	"	"	750	"	"
"	"	65	"	"	1800	"	"

Packing for Export, 5 per cent. extra.

\* If required, the Pumps can be arranged to throw a less quantity of water to a greater height, or a greater quantity to a lesser height.



## TURBINE, WITH HORIZONTAL SHAFT, DRIVING STAMPING MACHINERY.



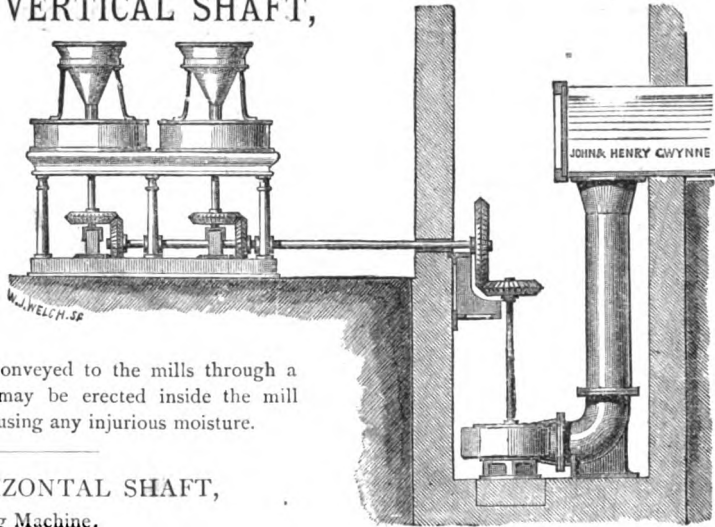
In mining districts small streams of water falling from great heights are generally found, which cannot be made available for driving machinery by ordinary water-wheels, on account of the great diameter such wheels would require. A very small and inexpensive Turbine in such a case will answer the purpose admirably. Such a Turbine may frequently be placed in the line of the piping, as per sketch, and requires scarcely any foundation; in fact, it may be frequently supported by the piping alone.

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## TURBINE, WITH VERTICAL SHAFT,

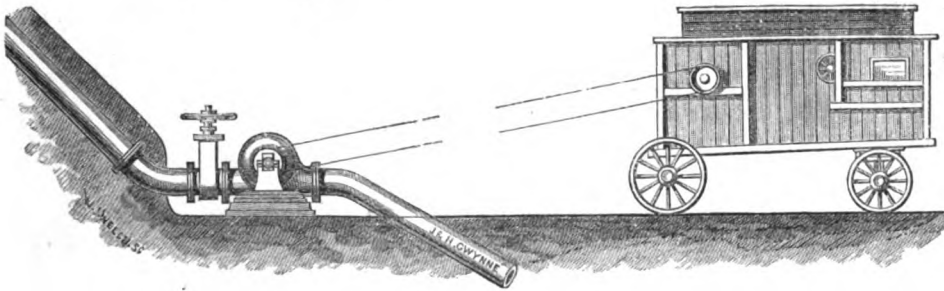
Driving a Corn Mill with two pairs of Stones.

Turbines are preferable to ordinary water-wheels for driving corn mills, not only on account of their greater efficiency, but also on account of their steady motion, which is of great importance in driving machinery that is at work day and night, as well as having a decided influence on the quality of the flour ground. The gearing generally required consists of a pair of light bevel-wheels, the power being conveyed to the mills through a line shaft. If necessary, the Turbine may be erected inside the mill without taking up any useful space, or causing any injurious moisture.



## TURBINE, WITH HORIZONTAL SHAFT,

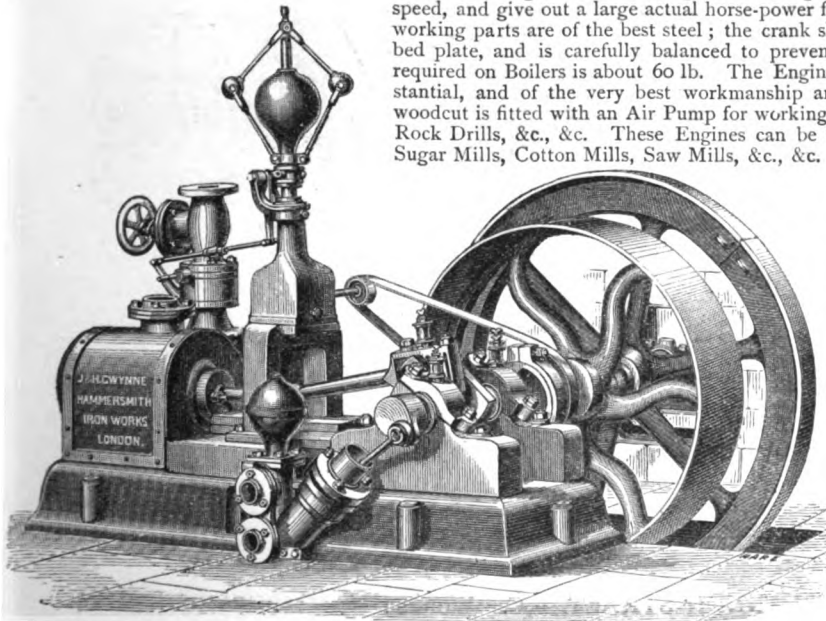
Driving a Thrashing Machine.



For driving Thrashing Machines and other Farm Machinery, Turbines are particularly suitable, on account of the high speed at which they run, and the little water they consume. If the Turbine is one with Horizontal Shaft the power can always be transmitted direct by pulleys and a strap to the Thrashing Machine, or to a line shaft running at a high velocity, which is the most suitable for this class of machinery.

## HORIZONTAL HIGH-PRESSURE ENGINES.

The annexed woodcut is engraved from a photograph of one of our high-speed Horizontal Engines. These Engines are designed and constructed to work at a high speed, and give out a large actual horse-power for the size of the Cylinder. All the working parts are of the best steel; the crank shaft is made with double bearings in bed plate, and is carefully balanced to prevent vibration. The pressure of steam required on Boilers is about 60 lb. The Engines altogether are very compact, substantial, and of the very best workmanship and material. The one shown in the woodcut is fitted with an Air Pump for working Compressed Air Machinery, such as Rock Drills, &c., &c. These Engines can be made with long strokes, suitable for Sugar Mills, Cotton Mills, Saw Mills, &c., &c.



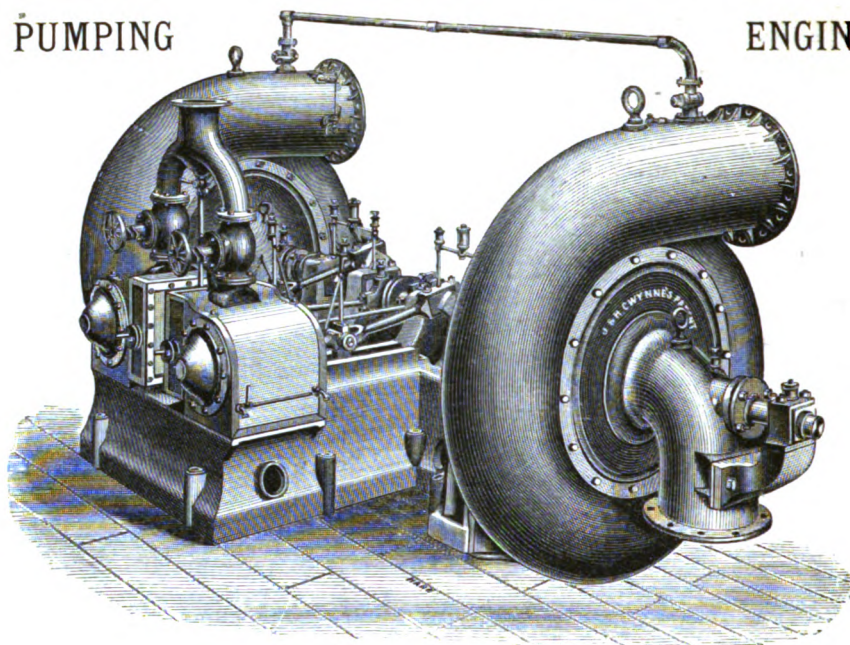
Horse-power.			Diam. of Cy-linder.	Length of Stroke.	Revolu-tions per Minute.
	Nom.	Indica-ted.			
1	1 3/4	1 3/4	3 1/2	3 1/2	300
2	2 1/4	3 3/4	4 1/2	4 1/2	270
2 1/2	5	5 3/4	5 1/2	4 3/4	270
3	8 1/2	6	6	6	250
3 3/4	10	6 1/2	6 1/2	6 1/2	240
4 1/2	14 1/2	7 1/2	7 1/2	7 1/2	220
5 1/2	16	8	8	8	200
6 1/2	23	9	9	9	199
8 1/2	28	10	10	10	180

Catalogues and Prices on application.

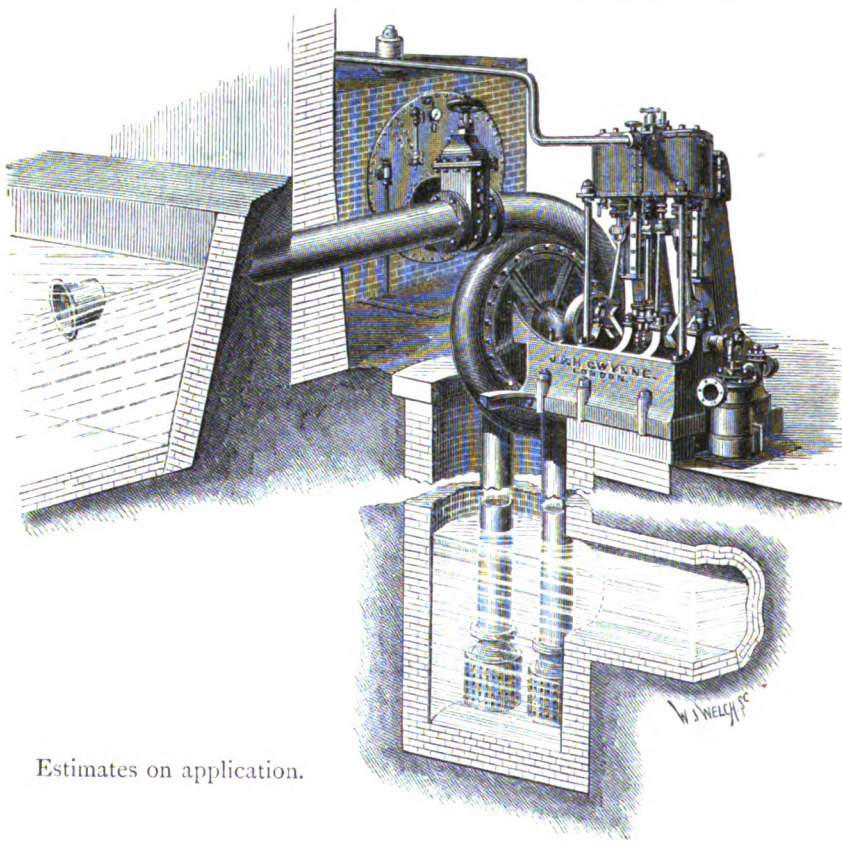
**JOHN AND HENRY GWYNNE,**  
ENGINEERS. OFFICES: 89, CANNON STREET, E.C. WORKS: HAMMERSMITH IRON WORKS, LONDON, W.

# HIGH-PRESSURE OR COMPOUND DIRECT-ACTING CENTRIFUGAL PUMPING ENGINES,

Fitted with Surface or Jet Condensers, for Graving



Docks, Irrigation, Drainage, or Reclamation Works.



Estimates on application.

**JOHN AND HENRY GWYNNE,**  
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